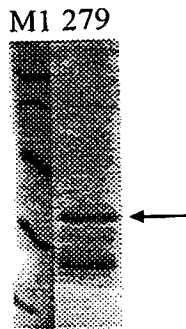


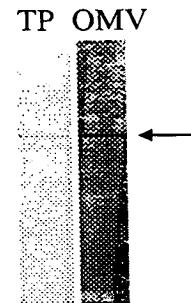
Fig. 2

279 (10.5 kDa)

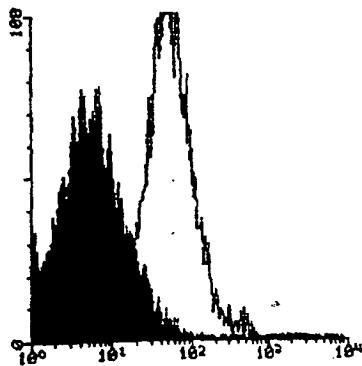
A) PURIFICATION



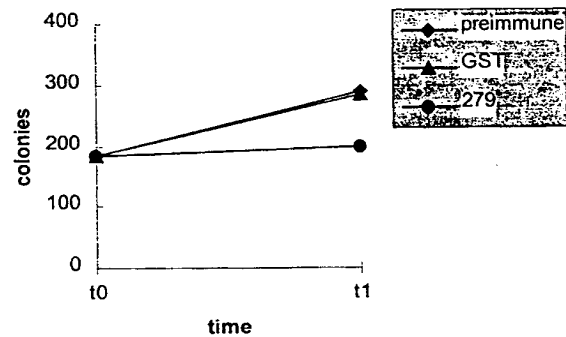
B) WESTERN BLOT



C) FACS



D) BACTERICIDAL ASSAY

E) ELISA assay: positive

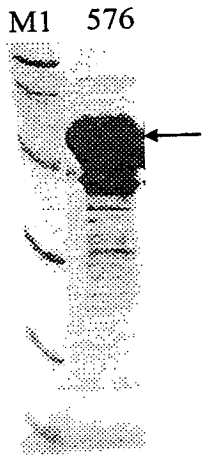
279

The predicted gene 279 was cloned in pGex vector and expressed in *E. coli*. The product of protein expression and purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 279-GST purification. Mice were immunized with the purified 279-GST and sera were used for Western blot analysis (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Results show that protein 279 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B).

Fig. 3

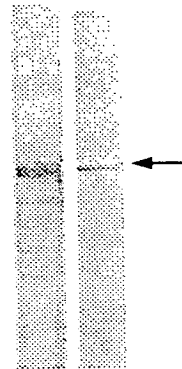
576 (27.8 kDa)

A) PURIFICATION

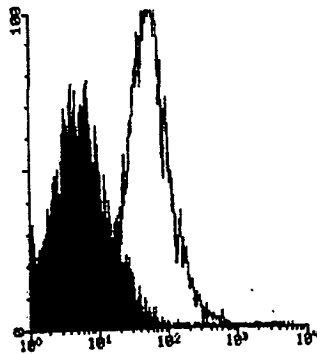


B) WESTERN BLOT

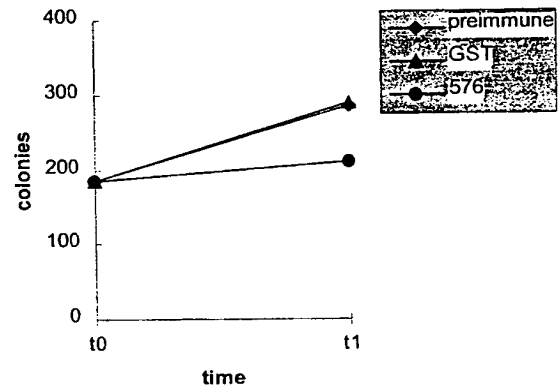
TP OMV



C) FACS



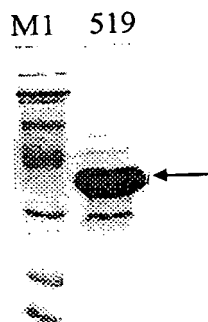
D) BACTERICIDAL ASSAY

E) ELISA assay: positive

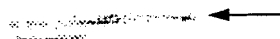
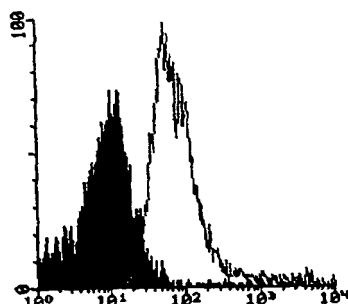
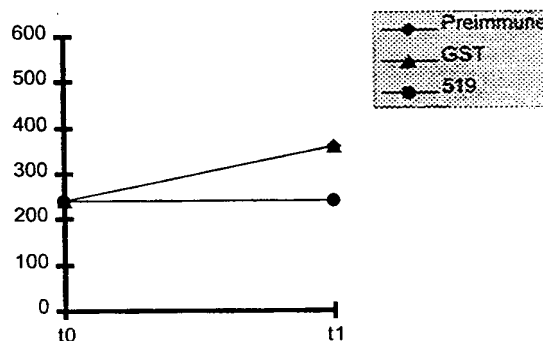
576

The predicted gene 576 was cloned in pGex vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 576-GST fusion protein purification. Mice were immunized with the purified 576-GST and sera were used for Western blot (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Results show that 576 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B).

Fig. 4

519 (33 kDa)**A) PURIFICATION****B) WESTERN BLOT**

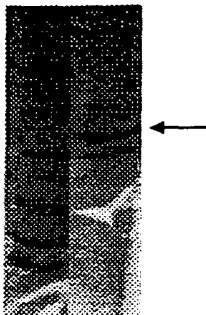
TP OMV

**C) FACS****D) BACTERICIDAL ASSAY****E) ELISA assay: positive****519**

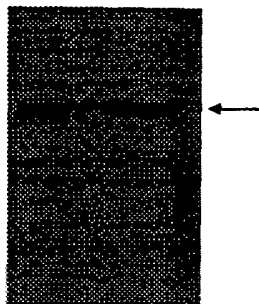
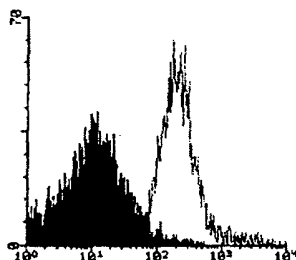
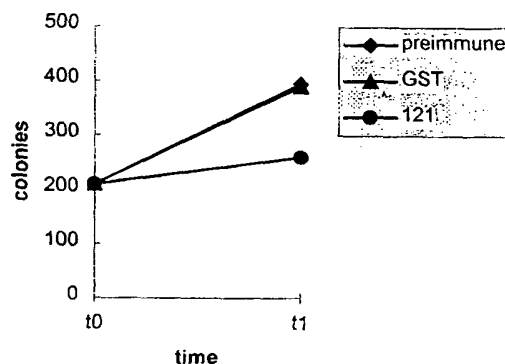
The predicted gene *519* was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 519-His fusion protein purification. Mice were immunized with the purified 519-His and sera were used for Western blot (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Results show that 519 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B).

121 (40 kDa)**A) PURIFICATION**

M1 121

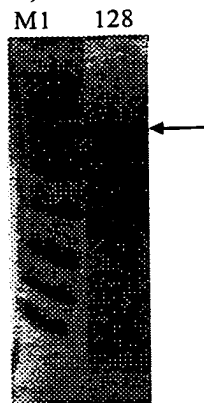
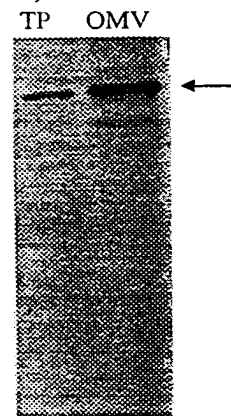
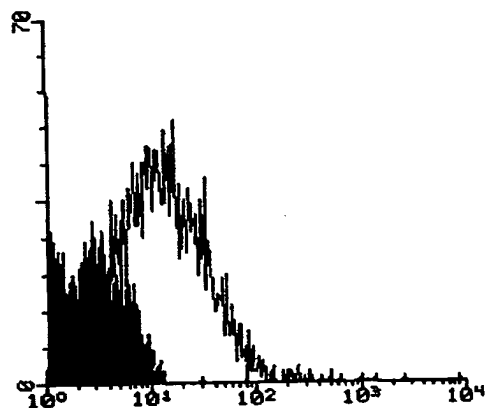
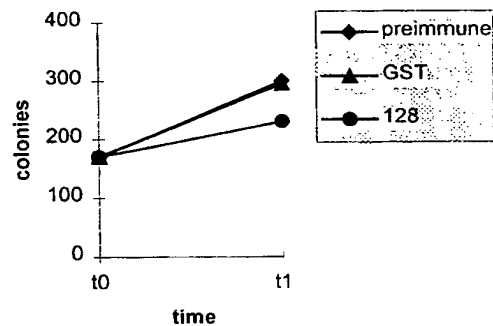
**B) WESTERN BLOT**

TP OMV

**C) FACS****D) BACTERICIDAL ASSAY****E) ELISA assay: positive****121**

The predicted gene *121* was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 121-His fusion protein purification. Mice were immunized with the purified 121-His and sera were used for Western blot analysis (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Results show that 121 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B).

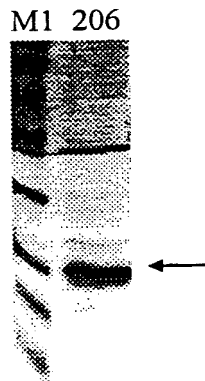
Fig. 5

128 (101 kDa)**Fig. 6****A) PURIFICATION****B) WESTERN BLOT****C) FACS****D) BACTERICIDAL ASSAY****E) ELISA assay: positive****128**

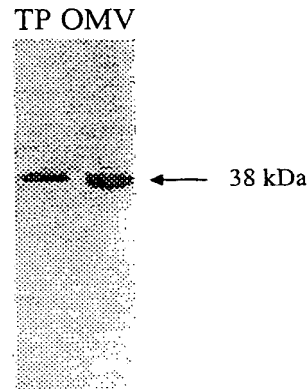
The predicted gene *128* was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 128-His purification. Mice were immunized with the purified 128-His and sera were used for Western blot analysis (panel B), FACS analysis (panel C), bactericidal assay (panel D) and ELISA assay (panel E). Results show that 128 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B).

Fig. 7

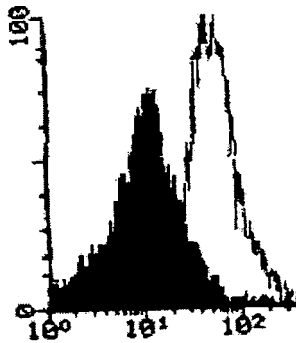
A) PURIFICATION



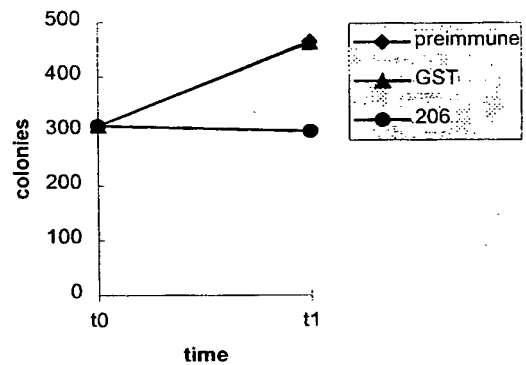
B) WESTERN BLOT



C) FACS



D) BACTERICIDAL ASSAY



E) ELISA assay: positive

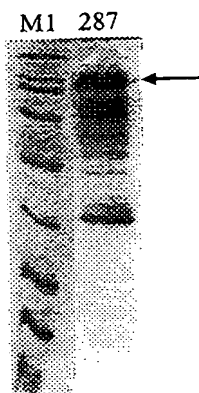
206

The predicted gene 206 was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 206-His purification. Mice were immunized with the purified 206-His and sera were used for Western blot analysis (panel B). It is worth noting that the immunoreactive band in protein extracts from meningococcus is 38 kDa instead of 17 kDa (panel A). To gain information on the nature of this antibody staining we expressed ORF 206 in *E. coli* without the His-tag and including the predicted leader peptide. Western blot analysis on total protein extracts from *E. coli* expressing this native form of the 206 protein showed a reactive band at a position of 38 kDa, as observed in meningococcus. We conclude that the 38 kDa band in panel B) is specific and that anti-206 antibodies, likely recognize a multimeric protein complex. In panel C) is shown the FACS analysis, in panel D) the bactericidal assay, and in panel E) the ELISA assay. Results show that 206 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B).

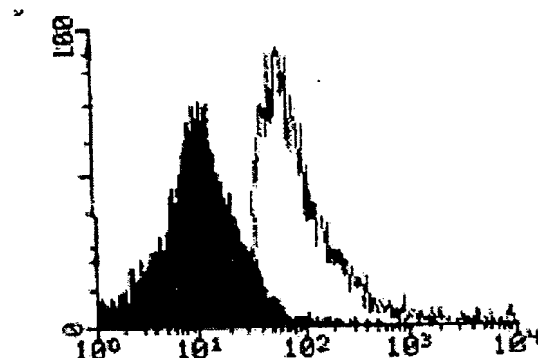
287 (78 kDa)

Fig. 8

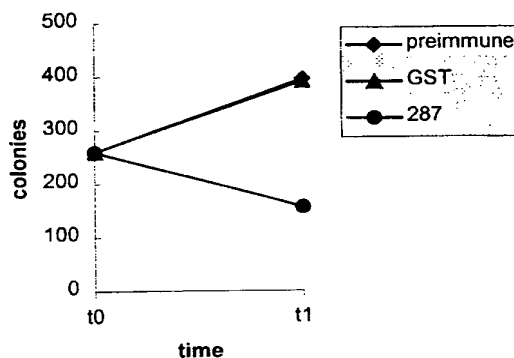
A) PURIFICATION



B) FACS



C) BACTERICIDAL ASSAY

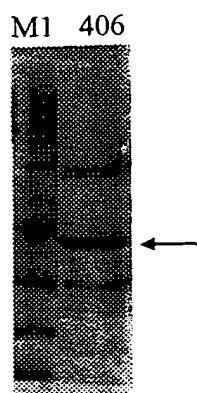
D) ELISA assay : positive**287**

The predicted gene 287 was cloned in pGex vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 287-GST fusion protein purification. Mice were immunized with the purified 287-GST and sera were used for FACS analysis (panel B), bactericidal assay (panel C), and ELISA assay (panel D). Results show that 287 is a surface-exposed protein. Symbols: M1, molecular weight marker. Arrow indicates the position of the main recombinant protein product (A).

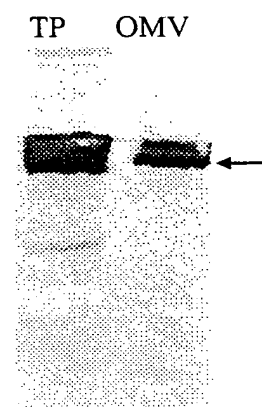
406 (33 kDa)

Fig. 9

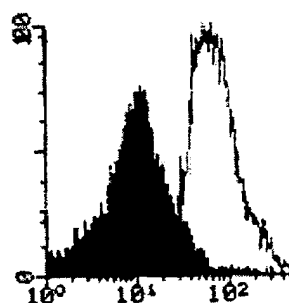
A) PURIFICATION



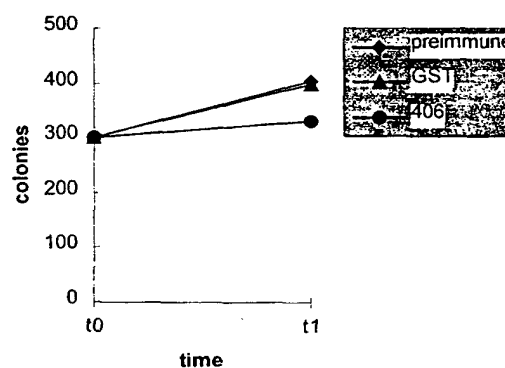
B) WESTERN BLOT



C) FACS



D) BACTERICIDAL ASSAY

E) ELISA assay : positive**406**

The predicted gene *406* was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 406-His fusion protein purification. Mice were immunized with the purified 406-His and sera were used for Western blot analysis (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Results show that 406 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B).

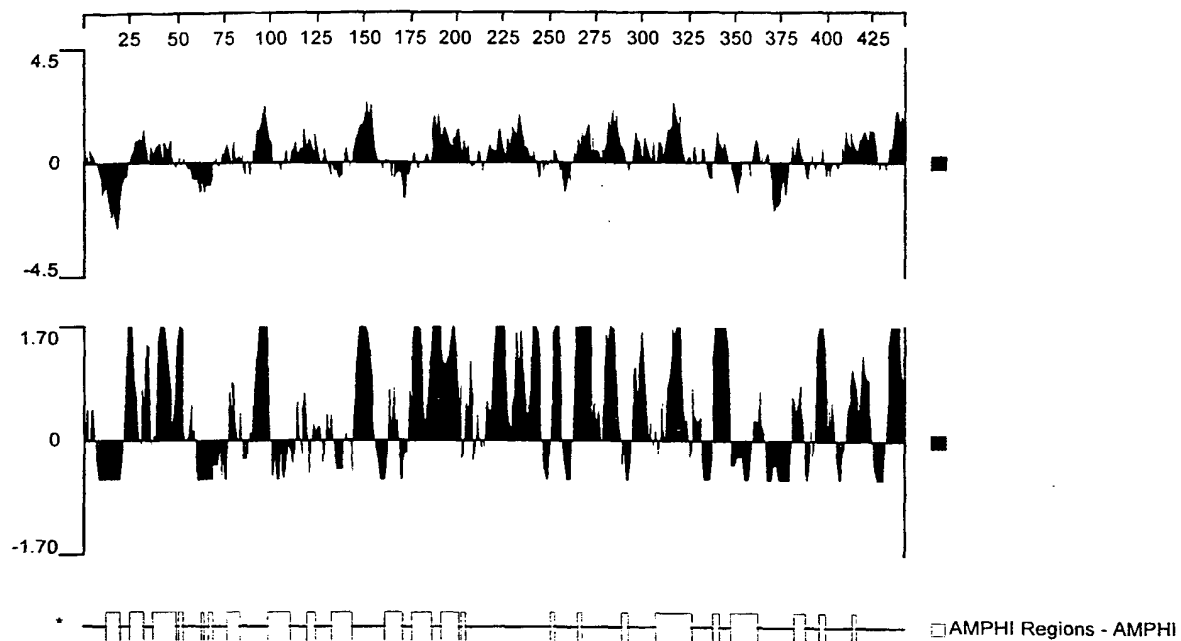
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 10

Hydrophilicity Plot, Antigenic Index and AMPHI Regions

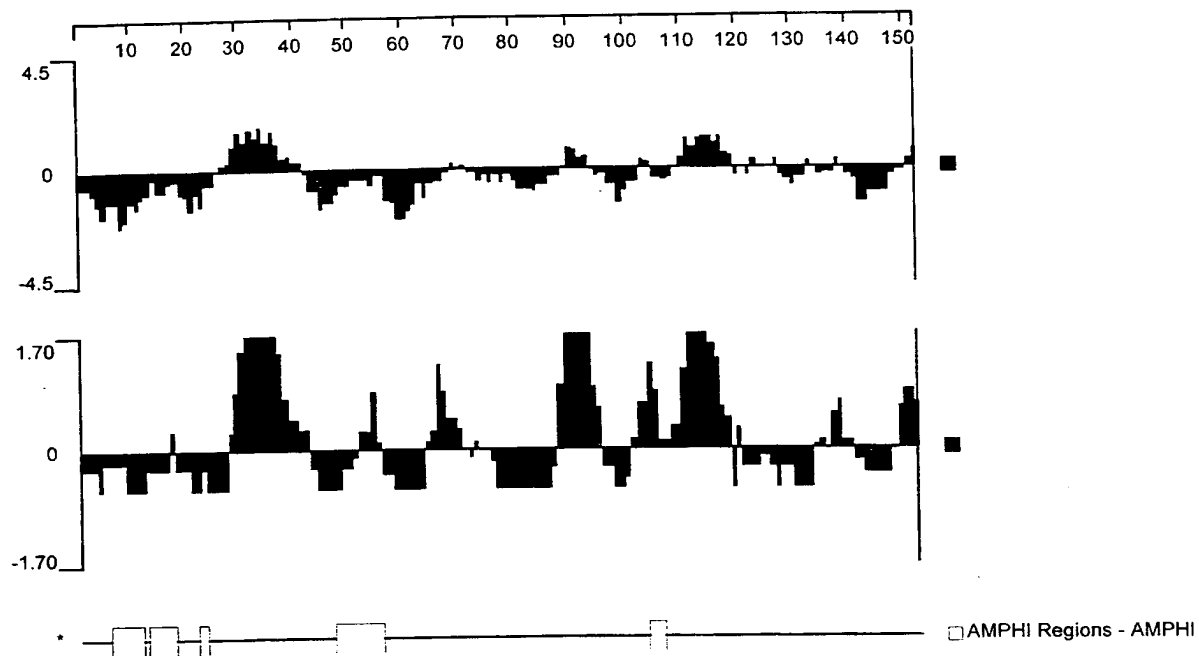


Fig. 11

11/30

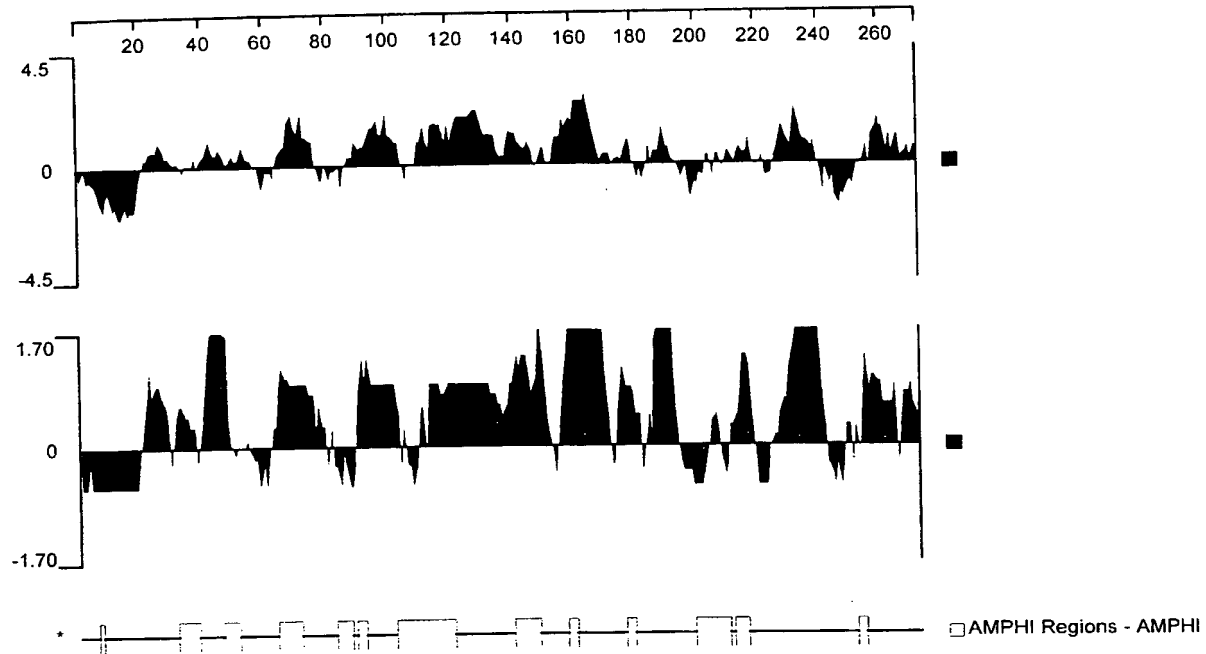
576-1Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 12

09/674546

WO 99/57280

PCT/US99/09346

12/30

519-1

Hydrophilicity Plot, Antigenic Index and AMPHI Regions

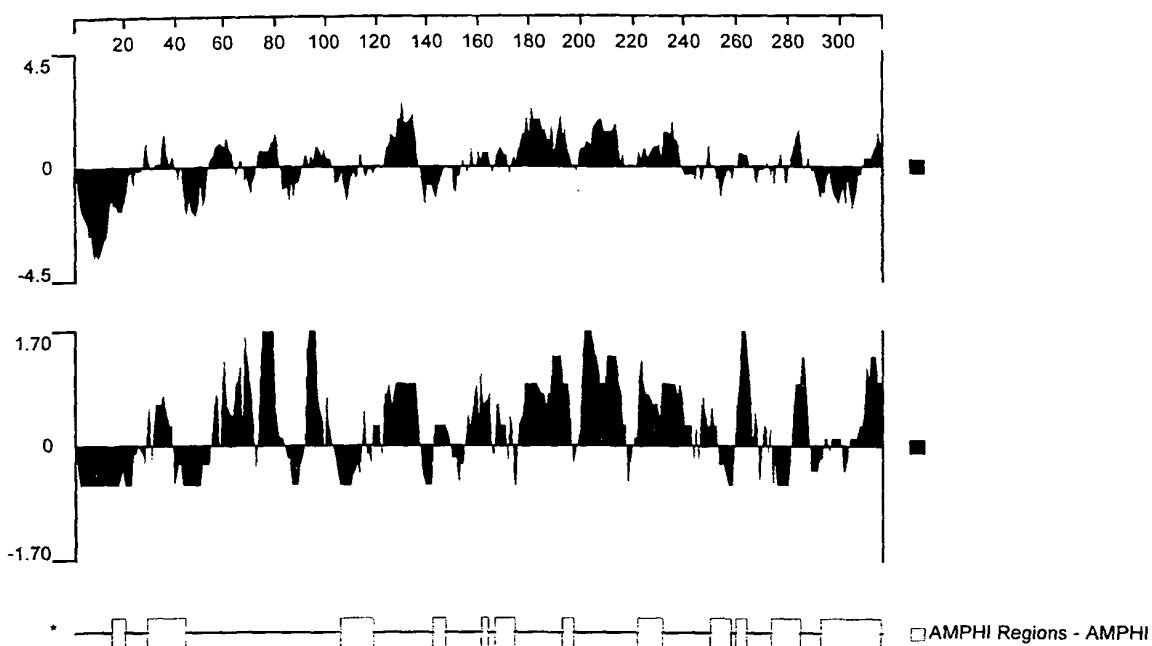


Fig. 13

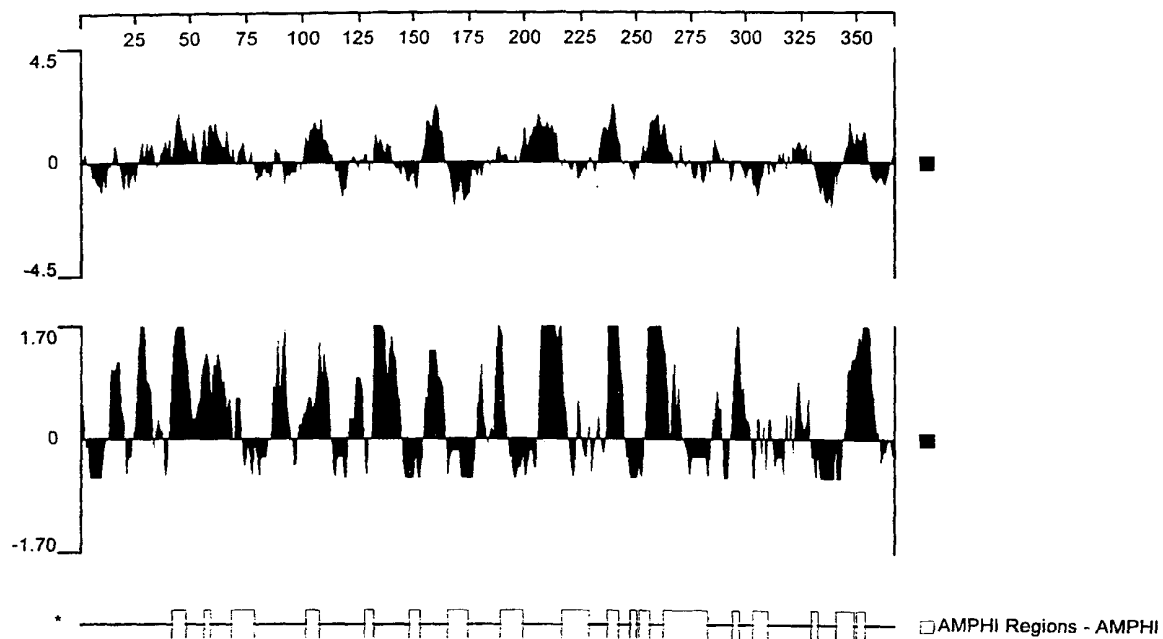
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 14

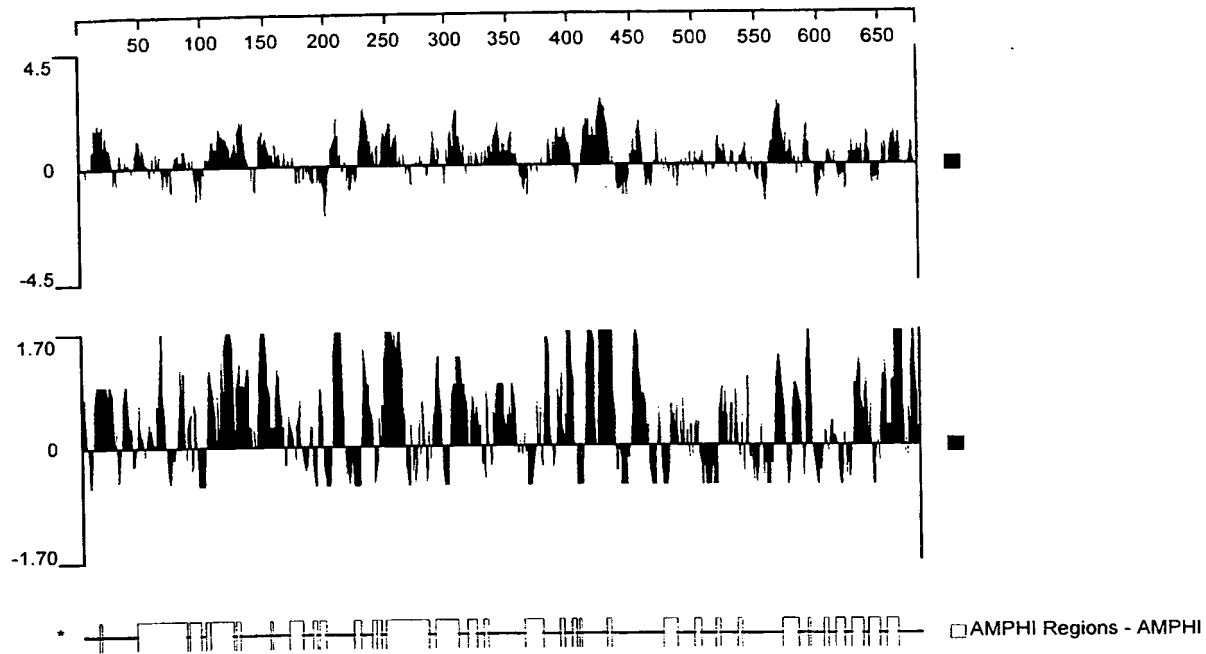
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 15

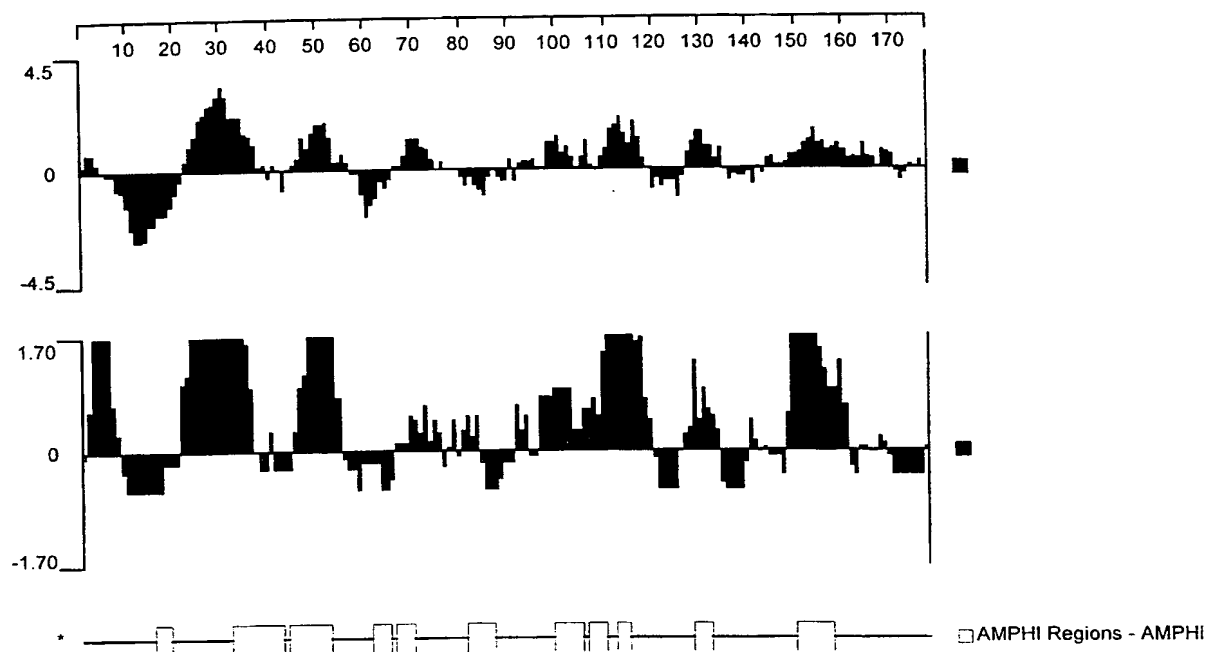
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 16

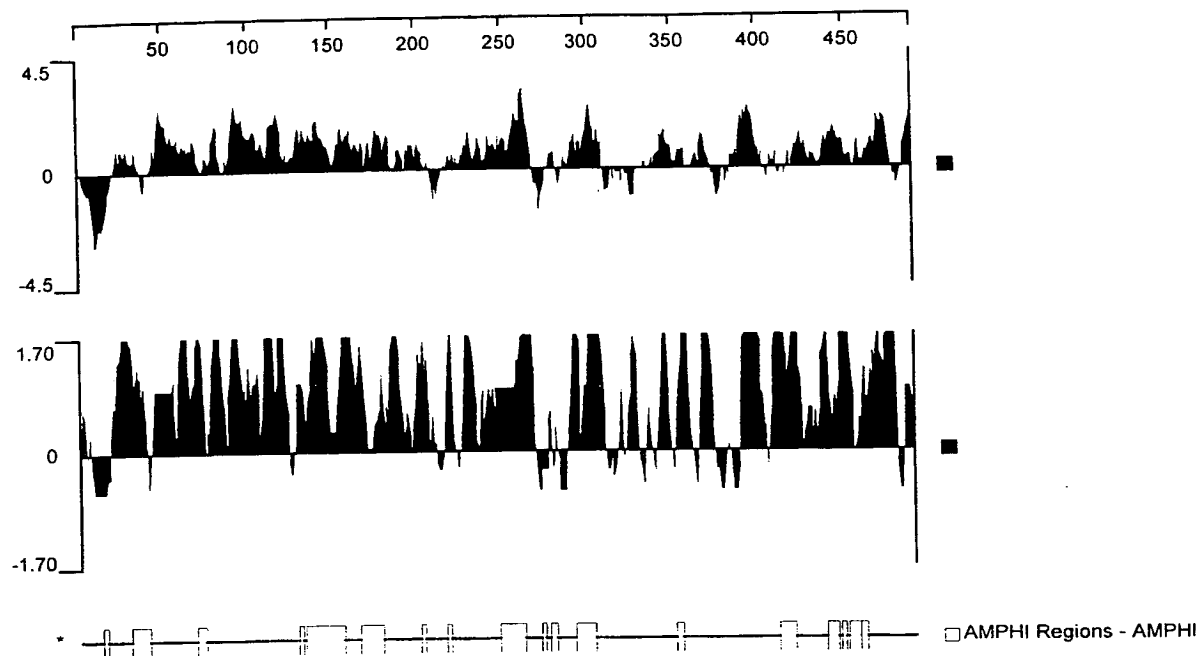
287Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 17

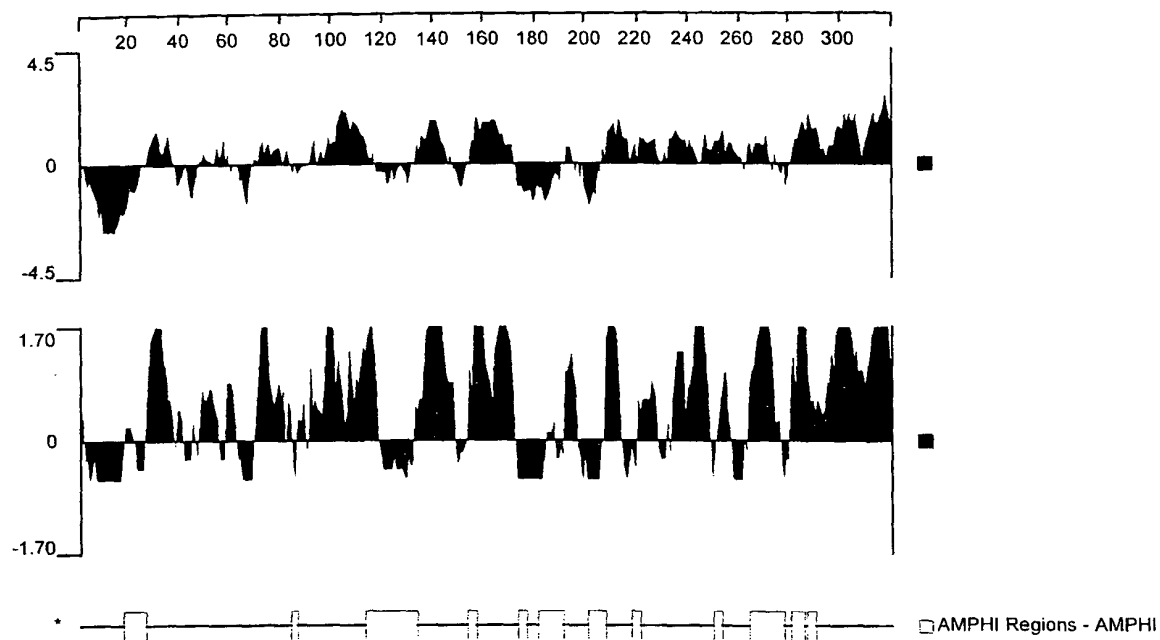
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 18

Fig. 19A

Fig. 19B

zo05_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo08_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
z2491	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo11_225	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo20_225	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo01_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo09_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo12_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo22_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo23_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo24_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo25_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo26_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo96_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo02_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo04_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo06_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo07_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo10_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo14_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo16_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo17_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo18_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo19_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo21_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo27_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo28_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo29_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo13_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo03_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo15_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
fa1090	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo32_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*
zo33_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKKNDPSRFLN*

Fig. 19C

Fig. 20A

gnmzq09	121	YQILDSVTTVSAKARLVDSRNGKVLWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq31	121	YQILDSVTTVSAKARLVDSRNGKVLWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
fa1090	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq32	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq33	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq01	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq05	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq08	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq02	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq03	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq04	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq07	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq10	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq11	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq13	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq15	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq16	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq17	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq19	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq21	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
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gnmzq23	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq24	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq25	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq27	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq28	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq29	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
z2491	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq14	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq18	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq26	121	YQILDSVTTVSAKARLVDSRNGKELWSGSASIREGSNNNSGILLGALVSAVVNQIANSLT
gnmzq09	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq31	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
fa1090	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq32	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq33	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq01	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq05	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq08	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq02	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq03	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq04	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq07	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq10	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq11	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq13	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq15	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq16	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq17	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq19	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq21	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq22	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq23	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq24	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq25	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq27	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq28	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq29	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
z2491	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq14	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq18	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq26	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*

Fig. 20B

```

287_14 1 MFKRSVIAMACIFALSACGGGGGGSPDVKSADTL SKPAAPVVSE.....KETE
287_2 1 MFKRSVIAMACIFALSACGGGGGGSPDVKSADTL SKPAAPVVSE.....KETE
287_21 1 MFKRSVIAMACIFALSACGGGGGGSPDVKSADTL SKPAAPVVSE.....KETE
z2491 1 MFKRSVIAMACIFALSACGGGGGGSPDVKSADTL SKPAAPVVSE.....KETE
287_9 1 MFKRSVIAMACIFALSACGGGGGGSPDVKSADTL SKPAAPVVSE.....KETE
fa1090 1 MFKRSVIAMACIFALSACGGGGGGSPDVKSADTL SKPAAPVVSE.....KETE

```

```

287_14 50 KEDAPQAGSQGOGAPSAQSGQDMAAVSEENTGNGGAAATDKPKNEDEGAQNDMPQNAADT
287_2 50 KEDAPQAGSQGOGAPSAQSGQDMAAVSEENTGNGGAAATDKPKNEDEGAQNDMPQNAADT
287_21 50 KEDAPQAGSQGOGAPSAQSGQDMAAVSEENTGNGGAAATDKPKNEDEGAQNDMPQNAADT
z2491 50 KEDAPQAGSQGOGAPSAQSGQDMAAVSEENTGNGGAAATDKPKNEDEGAQNDMPQNAADT
287_9 61 VSGAPQADT...ODATAGKGGQDMAAVSAENTGNGGAATTDNPKNEDEGAQNDMPQNAADT
fa1090 61 AGGAPQADT...ODATAGKGGQDMAAVSAENTGNGGAATTDNPKNEDEGAQNDMPQNAADT

```

```

287_14 110 DSLTPNHTPASNMPAGNMENQAPDAGESEQPANQPDMAANTADGMQGGDDPSAGGENAGNTA
287_2 110 DSLTPNHTPASNMPAGNMENQAPDAGESEQPANQPDMAANTADGMQGGDDPSAGGENAGNTA
287_21 110 DSLTPNHTPASNMPAGNMENQAPDAGESEQPANQPDMAANTADGMQGGDDPSAGGENAGNTA
z2491 110 DSLTPNHTPASNMPAGNMENQAPDAGESEQPANQPDMAANTADGMQGGDDPSAGGENAGNTA
287_9 119 DSLTPNHTPASNMPTRDMGNQAPDAGESEQPANQPDMAANTADGMQGGDDPSAGGENAGNTA
fa1090 117 .....

```

```

287_14 170 AQGTNOAENNOTAGSQNPASSTNPSATNSGGDFGRTNVGNNSVVIDGPSQNTLTHCKGDS
287_2 170 AQGTNOAENNOTAGSQNPASSTNPSATNSGGDFGRTNVGNNSVVIDGPSQNTLTHCKGDS
287_21 170 AQGTNOAENNOTAGSQNPASSTNPSATNSGGDFGRTNVGNNSVVIDGPSQNTLTHCKGDS
z2491 170 AQGTNOAENNOTAGSQNPASSTNPSATNSGGDFGRTNVGNNSVVIDGPSQNTLTHCKGDS
287_9 178 AQGTNOAENNOTAGSQNPASSTNPSATNSGGDFGRTNVGNNSVVIDGPSQNTLTHCKGDS
fa1090 117 ..ESANQGTGNQAPAGSSDSAPASNPAPANGGSDFGRTNVGNNSVVIDGPSQNTLTHCKGDS

```

```

287_14 230 CSGNNFLDEEVQLKSEFEKLSDAKISNYKKDGKNDGKNKRFVGLVADSVMQKGINOYII
287_2 230 CSGNNFLDEEVQLKSEFEKLSDAKISNYKKDGKNDGKNKRFVGLVADSVMQKGINOYII
287_21 230 CSGNNFLDEEVQLKSEFEKLSDAKISNYKK....DGKNKRFVGLVADSVMQKGINOYII
z2491 230 CSGNNFLDEEVQLKSEFEKLSDAKISNYKK....DGKNKRFVGLVADSVMQKGINOYII
287_9 238 CDRD..FLDEEAPPKSEFEKLSDEKINKYKK....DEQRNRFVGLVADRVKXNKTNYII
fa1090 176 CNGDNLLDEEAPS KSEFEKLSDEKIKRYKK....DEQRNRFVGLVADRVKXNKTNYII

```

```

287_14 290 FYKPKP...TSFARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSNIFAPEG
287_2 290 FYKPKP...TSFARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSNIFAPEG
287_21 286 FYKPKP...TSFARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSNIFAPEG
z2491 286 FYKPKP...TSFARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSNIFAPEG
287_9 293 IYKDKSASSSARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSNIFAPEG
fa1090 232 FYTDKPEPT.....RSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSNIFAPEG

```

```

287_14 348 NYRYLTYGAEKLPGGSYALRVQGEPSKGEMLAGTAVYNGEVLHFHTENGRPSPPGRFAA
287_2 348 NYRYLTYGAEKLPGGSYALRVQGEPSKGEMLAGTAVYNGEVLHFHTENGRPSPPGRFAA
287_21 344 NYRYLTYGAEKLPGGSYALRVQGEPAKGEMLAGTAVYNGEVLHFHTENGRPSPPGRFAA
z2491 344 NYRYLTYGAEKLPGGSYALRVQGEPAKGEMLAGTAVYNGEVLHFHTENGRPSPPGRFAA
287_9 353 NYRYLTYGAEKLPGGSYALRVQGEPAKGEMLAGTAVYNGEVLHFHTENGRPSPPGRFAA
fa1090 285 NYRYLTYGAEKLPGGSYALRVQGEPAKGEMLAGTAVYNGEVLHFHTENGRPSPPGRFAA

```

```

287_14 408 KVDFGSKSV DGIIDSGDGLHMGTOQKFKAIDGNGFKGTWTENG GGDVSGIFYG PAGEEVA
287_2 408 KVDFGSKSV DGIIDSGDGLHMGTOQKFKAIDGNGFKGTWTENG GGDVSGIFYG PAGEEVA
287_21 404 KVDFGSKSV DGIIDSGDGLHMGTOQKFKAIDGNGFKGTWTENG GGDVSGIFYG PAGEEVA
z2491 404 KVDFGSKSV DGIIDSGDGLHMGTOQKFKAIDGNGFKGTWTENG GGDVSGIFYG PAGEEVA
287_9 413 KVDFGSKSV DGIIDSGDGLHMGTOQKFKAIDGNGFKGTWTENG GGDVSGIFYG PAGEEVA
fa1090 345 KVDFGSKSV DGIIDSGDGLHMGTOQKFKAIDGNGFKGTWTENG GGDVSGIFYG PAGEEVA

```

FIG. 21A

287_14	468	GKYSYRPTDAEKGGFGVFAGKKEQD*
287_2	468	GKYSYRPTDAEKGGFGVFAGKKEQD*
287_21	464	GKYSYRPTDAEKGGFGVFAGKKEQD*
z2491	464	GKYSYRPTDAEKGGFGVFAGKKEQD*
287_9	473	GKYSYRPTDAEKGGFGVFAGKKEQD*
fa1090	405	GKYSYRPTDAEKGGFGVFAGKKQRD*

FIG. 21B


```

z2491_519      1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv26_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv22_519ass    1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
fa1090_519     1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv32_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv11_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv28_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv96_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv02_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv03_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv04_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv05_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv01_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv07_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv12_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv18_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv19_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv21_519ass    1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv27_519       1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv20_519ass    1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv06_519ass    1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI
zv29_519ass    1 MEFFIILLAAVAVFGFKSFVVIPQQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSI

```

```

z2491_519      61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv26_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv22_519ass    61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
fa1090_519     61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv32_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv11_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv28_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv96_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv02_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv03_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv04_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv05_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv01_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv07_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv12_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv18_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv19_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv21_519ass    61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv27_519       61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv20_519ass    61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv06_519ass    61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv29_519ass    61 KEIPLDVP SQVCITRDNTQLTVDGIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG

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z2491_519      121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv26_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv22_519ass    121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
fa1090_519     121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv32_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv11_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv28_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv96_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv02_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv03_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv04_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv05_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv01_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv07_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv12_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv18_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv19_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv21_519ass    121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv27_519       121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv20_519ass    121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv06_519ass    121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv29_519ass    121 RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE

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FIG. 22A

```

z2491_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv26_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv22_519ass 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
fa1090_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv32_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv11_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv28_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv96_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv02_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv03_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv04_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv05_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv01_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv07_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv12_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv18_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv19_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv21_519ass 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv27_519 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv20_519ass 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv06_519ass 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv29_519ass 181 KRARIAESEGRKIEQINLASGQREAEIQOSEGEAQAAVNASNAEKIARINRAKGEAESLR

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```

z2491_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv26_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv22_519ass 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
fa1090_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv32_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv11_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv28_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv96_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv02_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv03_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv04_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv05_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv01_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv07_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv12_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv18_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv19_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv21_519ass 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv27_519 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv20_519ass 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv06_519ass 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
zv29_519ass 241 LVAEANAEAIROIAAALQTQGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL

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z2491_519 301 ISAGMKIIDSSSKTAK*
zv26_519 301 ISAGMKIIDSSSKTAK*
zv22_519ass 301 ISAGMKIIDSSSKTAK*
fa1090_519 301 ISAGMKIIDSSSKTAK*
zv32_519 301 ISAGMKIIDSSSKTAK*
zv11_519 301 ISAGMKIIDSSSKTAK*
zv28_519 301 ISAGMKIIDSSSKTAK*
zv96_519 301 ISAGMKIIDSSSKTAK*
zv02_519 301 ISAGMKIIDSSSKTAK*
zv03_519 301 ISAGMKIIDSSSKTAK*
zv04_519 301 ISAGMKIIDSSSKTAK*
zv05_519 301 ISAGMKIIDSSSKTAK*
zv01_519 301 ISAGMKIIDSSSKTAK*
zv07_519 301 ISAGMKIIDSSSKTAK*
zv12_519 301 ISAGMKIIDSSSKTAK*
zv18_519 301 ISAGMKIIDSSSKTAK*
zv19_519 301 ISAGMKIIDSSSKTAK*
zv21_519ass 301 ISAGMKIIDSSSKTAK*
zv27_519 301 ISAGMKIIDSSSKTAK*
zv20_519ass 301 ISAGMKIIDSSSKTAK*
zv06_519ass 301 ISAGMKIIDSSSKTAK*
zv29_519ass 301 ISAGMKIIDSSSKTAK*

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Fig. 22B

fai1090	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm33asbc	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm32asbc	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm23asbc	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm27bc	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm09	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm10	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm24	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm25	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm14	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm04	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm11asbc	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm08n	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm96	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm01	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm02	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm03	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm07	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm12	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm18	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm19	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm20	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm21	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm06	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm17	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm13	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm05	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
z2491	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm22	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm26	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm29asbc	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm36	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER
zm39asbc	61	YTVVPHLSLPHWAQAQDFAKSLQSFRLGCANLKNNRQGWDVCAQAQAFQTPVHSFQAKOFFER

Fig. 23A

Fig. 23B

Fig. 23C

fa1090 361 IDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm33asbc 361 IDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm32asbc 361 IDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm23asbc 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm27bc 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm09 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm10 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm24 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm25 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm14 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm04 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm11asbc 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm08n 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm96 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm01 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm02 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm03 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm07 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm12 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm18 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm19 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm20 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm21 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm06 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm17 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm13 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm05 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
z2491 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm22 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm26 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm28 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm29asbc 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm16 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm15 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm31asbc 361 VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK

fa1090 421 QKTTGYVWQLLPNGMKPEYRP*
zm33asbc 421 QKTTGYVWQLLPNGMKPEYRP*
zm32asbc 421 QKTTGYVWQLLPNGMKPEYRP*
zm23asbc 421 MKEPGYVWQLLPNGMKPEYRP*
zm27bc 421 MKEPGYVWQLLPNGMKPEYRP*
zm09 421 QKTTGYVWQLLPNGMKPEYRP*
zm10 421 QKTTGYVWQLLPNGMKPEYRP*
zm24 421 QKTTGYVWQLLPNGMKPEYRP*
zm25 421 QKTTGYVWQLLPNGMKPEYRP*
zm14 421 QKTTGYVWQLLPNGMKPEYRP*
zm04 421 QKTTGYVWQLLPNGMKPEYRP*
zm11asbc 421 QKTTGYVWQLLPNGMKPEYRP*
zm08n 421 QKTTGYVWQLLPNGMKPEYRP*
zm96 421 QKTTGYVWQLLPNGMKPEYRP*
zm01 421 QKTTGYVWQLLPNGMKPEYRP*
zm02 421 QKTTGYVWQLLPNGMKPEYRP*
zm03 421 QKTTGYVWQLLPNGMKPEYRP*
zm07 421 QKTTGYVWQLLPNGMKPEYRP*
zm12 421 QKTTGYVWQLLPNGMKPEYRP*
zm18 421 QKTTGYVWQLLPNGMKPEYRP*
zm19 421 QKTTGYVWQLLPNGMKPEYRP*
zm20 421 QKTTGYVWQLLPNGMKPEYRP*
zm21 421 QKTTGYVWQLLPNGMKPEYRP*
zm06 421 QKTTGYVWQLLPNGMKPEYRP*
zm17 421 QKTTGYVWQLLPNGMKPEYRP*
zm13 421 QKTTGYVWQLLPNGMKPEYRP*
zm05 421 QKTTGYVWQLLPNGMKPEYRP*
z2491 421 QKTTGYVWQLLPNGMKPEYRP*
zm22 421 QKTTGYVWQLLPNGMKPEYRP*
zm26 421 QKTTGYVWQLLPNGMKPEYRP*
zm28 421 QKTTGYVWQLLPNGMKPEYRP*
zm29asbc 421 QKTTGYVWQLLPNGMKPEYRP*
zm16 421 QKTTGYVWQLLPNGMKPEYRP*
zm15 421 QKTTGYVWQLLPNGMKPEYRP*
zm31asbc 421 QKTTGYVWQLLPNGMKPEYRP*

Fig. 23D